AI Chess Bot Project Timeline

Period 1: (Sep 3 - Sep 17, 2024)

- **Set Up Initial Repository**:
    - asic structure.
    - Defined the project goals and outlined the scope in the README file.
- **Implement Chessboard and Pieces**:
    - Developed a basic chessboard layout using a 2D array representation.
    - Added classes for each chess piece (e.g., Pawn, Rook, Knight, etc.) with basic movement capabilities.
    - Implemented basic validation for piece movement according to chess rules.

Period 2: (Sep 18 - Oct 1, 2024)

- **Understanding Chess Rules**:
    - Conducted research on chess rules, including piece movement, capturing, and special moves (e.g., castling, en passant).
    - Studied common strategies and tactics used in chess.
- **Learning Basic Python Syntax**:
    - Completed tutorials on Python fundamentals to enhance programming skills.
    - Practiced using functions, loops, and data structures relevant to game development.

Period 3: (Oct 2 - Oct 16, 2024)

- **Implement Command-Line Chess Interface**:
    - Designed a simple text-based user interface to allow users to input moves and view the chessboard state.
    - Implemented user input handling to validate and execute moves.
- **Develop Chess Bot with Minimax Algorithm**:
    - Researched and understood the Minimax algorithm and its application in game AI.
    - Implemented the Minimax algorithm for the chess bot, allowing it to evaluate potential moves and select the optimal one based on the current game state.

Period 4: (Oct 17 - Oct 30, 2024)

- **Introduction and Implementation of Minimax**:
    - Refined the Minimax algorithm, ensuring it could evaluate multiple moves ahead by implementing depth control.
    - Began implementing Alpha-Beta Pruning to optimize the Minimax algorithm, reducing the number of nodes evaluated in the search tree.
- **Documentation Updates**:

- Updated the README file to reflect the current status of the project, including features implemented and upcoming tasks.
- Added comments and documentation within the codebase to enhance readability and maintainability.

Period 5: (Oct 31 - Nov 13, 2024)

Implement Drag-and-Drop Functionality and User Interface Enhancements

- **Design and Develop Drag-and-Drop Chessboard:**
  - Integrated the chessboard with a graphical user interface using Pygame.
  - Implemented drag-and-drop functionality for moving chess pieces.
  - Ensured that piece selection and placement align with valid moves and chess rules.
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Period 6: (Nov 13 - Nov 27, 2024)

- **Exploration of AI Algorithms**
  - Explored combining MCTS with Minimax for enhanced AI performance.
  - Decided to focus on refining the Minimax evaluation function instead, improving the bot's decision-making.
- **Enhancing the Evaluation Function**
  - Updated evaluation function to account for piece safety, king safety, positional advantages, and piece activity.
  - Optimized AI's depth control for better performance and more challenging gameplay.